Features

Unregulated Converters

- 3 Watt in a SIP4 Package
- 1-3kVDC Isolation
- Efficiency up to 90%
- -40°C to +100°C Operating Temperature Range
- IEC/EN/UL60950 Certified
- CB Report
- Industry Standard Pinout

RECOM

DC/DC Converter

RI3

3 Watt SIP4 Single Output

3 YEAR 3 warranty

Description

The RI3 series has been specifically designed for applications where board space is at a premium since these 3 Watt converters have the same foot print as the RI series 2 Watt converters. With efficiencies up to 90%, the full output power is available over the operating temperature range -40°C to +85°C and the converters can be used in ambient temperatures of up to 100°C with derating. The wide selection of input voltage and output voltage options plus an I/O-Isolation of 1kVDC, 2kVDC or 3kVDC makes these converters suitable for many industrial applications.

Selection Guide

Part Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. @ full load [%]	max. Capacitive Load (1) [µF]
RI3-0505S (2)	5	5	600	83	2200
RI3-0509S (2)	5	9	333	86	1200
RI3-0512S (2)	5	12	250	87	1000
RI3-0515S (2)	5	15	200	88	820
RI3-1205S (2)	12	5	600	85	2000
RI3-1209S (2)	12	9	333	88	1200
RI3-1212S (2)	12	12	250	89	1000
RI3-1215S (2)	12	15	200	89	820
RI3-1505S (2)	15	5	600	85	2000
RI3-1509S (2)	15	9	333	88	1200
RI3-1512S (2)	15	12	250	88	1000
RI3-1515S (2)	15	15	200	88	820
RI3-2405S (2)	24	5	600	86	2000
RI3-2409S (2)	24	9	333	89	1200
RI3-2412S (2)	24	12	250	90	1000
RI3-2415S (2)	24	15	200	90	820

Notes:

Note1: Max. capacitive load is tested at nominal input and constant resistive load.

c UL us E224736

IEC/EN60950-1 Certified
UL60950-1 Certified
CSA C22.2 NO. 60950 Certified
EN55022

Model Numbering

RI3-____/__

- Input Voltage
- Output Voltage
- Isolation (2)
- **S**ingle

Notes:

Note2: add suffix "H2" for 2kVDC/1second or "H3" for 3kVDC/1second isolation.
without suffix standard 1kVDC/1second isolation.

Examples:

e.g. RI3-1212S, Single Output, 12Vin and 12Vout, 1kVDC isolation
e.g. RI3-1212S/H2, Single Output, 12Vin and 12Vout, 2kVDC isolation
e.g. RI3-1212S/H3, Single Output, 12Vin and 12Vout, 3kVDC isolation

e.g. RI3-2405S, Single Output, 24Vin and 5Vout, 1kVDC isolation
e.g. RI3-2405S/H2, Single Output, 24Vin and 5Vout, 2kVDC isolation
e.g. RI3-2405S/H3, Single Output, 24Vin and 5Vout, 3kVDC isolation

Specifications (measured at T_a= 25°C, nominal input voltage, full load and after warm up unless otherwise specified)

BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		-10%		+10%
Operating Frequency	nominal Vin	20kHz	40kHz	
Minimum Load (3)			0%	
Output Ripple and Noise (4)	20MHz BW	50mVp-p	100mVp-p	

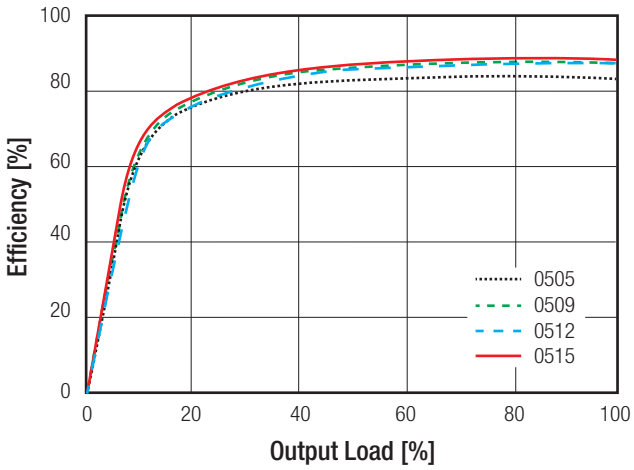
Notes:

Note3: Operation below no load won't harm the converter, but specifications may not be met.

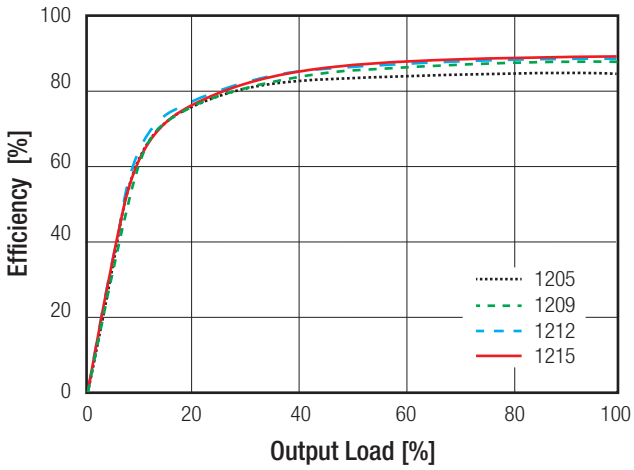
Note4: Measurements are made with a 100nF MLCC across output. (low ESR).

Efficiency vs. Load

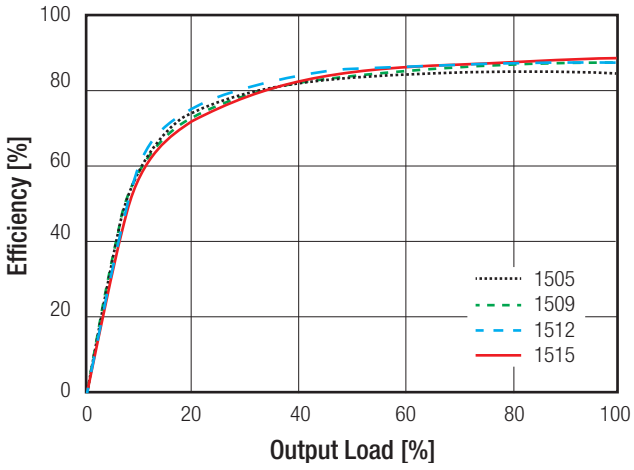
RI3-05xxS



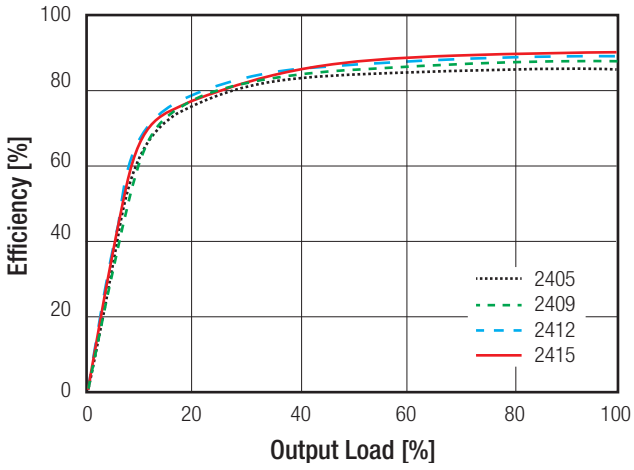
RI3-12xxS



RI3-15xxS



RI3-24xxS



REGULATIONS

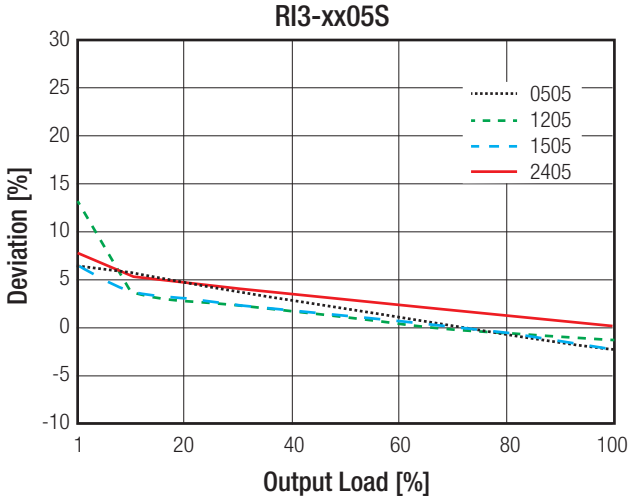
Parameter	Condition	Values
Output Voltage Accuracy	5Vout all other	3% min. / ±4% typ. 2% min. / ±3% typ.
Line Voltage Regulation	low line to high line, load @1% of Vin	±1.2% max.
Load Voltage Regulation	10% to 100% load 5Vout all other	±8% typ. / ±10% max. ±6% typ. / ±10% max.

continued on next page

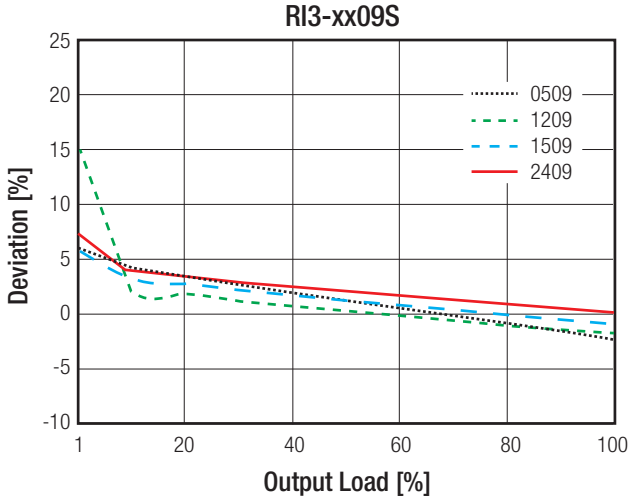
Specifications (measured at T_a= 25°C, nominal input voltage, full load and after warm up unless otherwise specified)

Deviation vs. Load

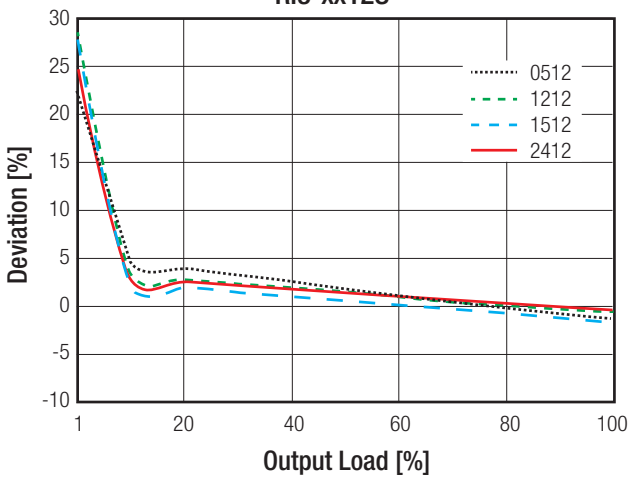
RI3-xx05S



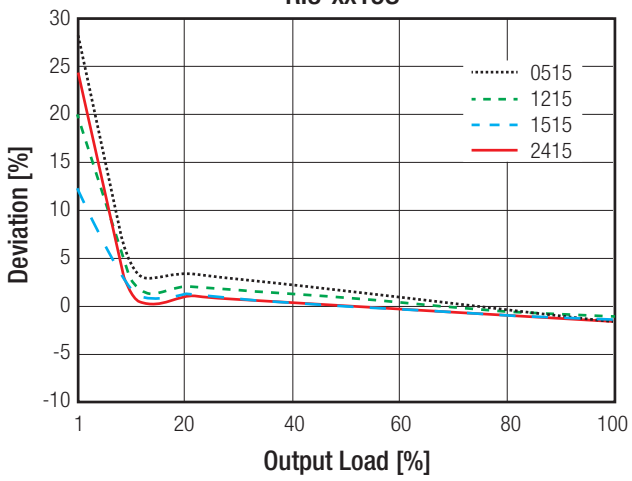
RI3-xx09S



RI3-xx12S



RI3-xx15S



PROTECTIONS		
Parameter	**Condition**	**Value**
Isolation Voltage	standard without suffix with suffix "H2" with suffix "H3"	1kVDC / tested for 1 second 2kVDC / tested for 1 second 3kVDC / tested for 1 second
Isolation Capacitance		37pF typ. / 130pF max.
Isolation Resistance		10GΩ min.

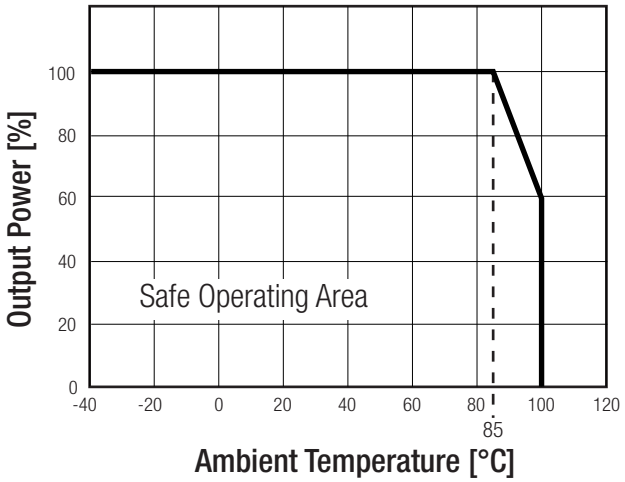
ENVIRONMENTAL		
Parameter	**Condition**	**Value**
Operating Temperature Range	free air convection, without derating with derating	-40°C to +85°C -40°C to +100°C
Maximum Case Temperature		+115°C
Operating Humidity	non-condensing	5% - 95% RH max.
Vibration		MIL-STD-202G
MTBF	according to MIL-HDBK-217F +25°C +85°C	4395 x 10^3 hours 1740 x 10^3 hours

continued on next page

Specifications (measured at T_a= 25°C, nominal input voltage, full load and after warm up unless otherwise specified)

Derating Graph

(@ Chamber and natural convection)



Notes:

Note5: For more details, please contact our technical support service at TechsupportAT@recom-power.com.

SAFETY AND CERTIFICATIONS

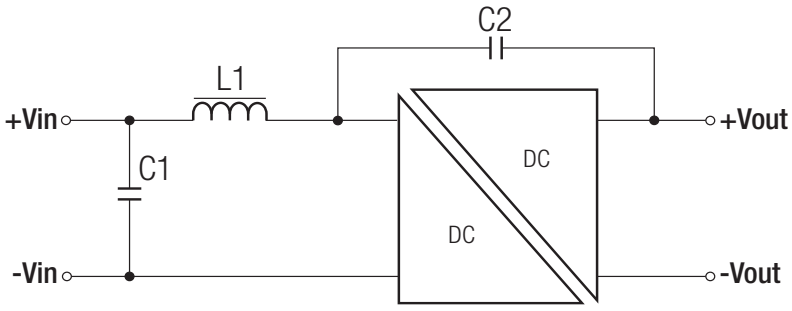
Certificate Type	Report / File Number	Standard
CB General Safety	E224736-A31	IEC60950-1, 2nd Edition, 2013 EN60950-1, 2nd Endition, 2013
UL General Safety	E224736-A32	UL60950-1, 2nd Edition, 2014
CAN/CSA General Safety		C22.2 No. 60950-1-07, 2nd Edition, 2014

EMC Compliance	Condition	Standard / Criterion
EMI [6]		EN55022, Class B

Notes:

Note6: RI3 Series can meet EN55022 Class A without any external filter.

EMC Filtering - Suggestions for Class B



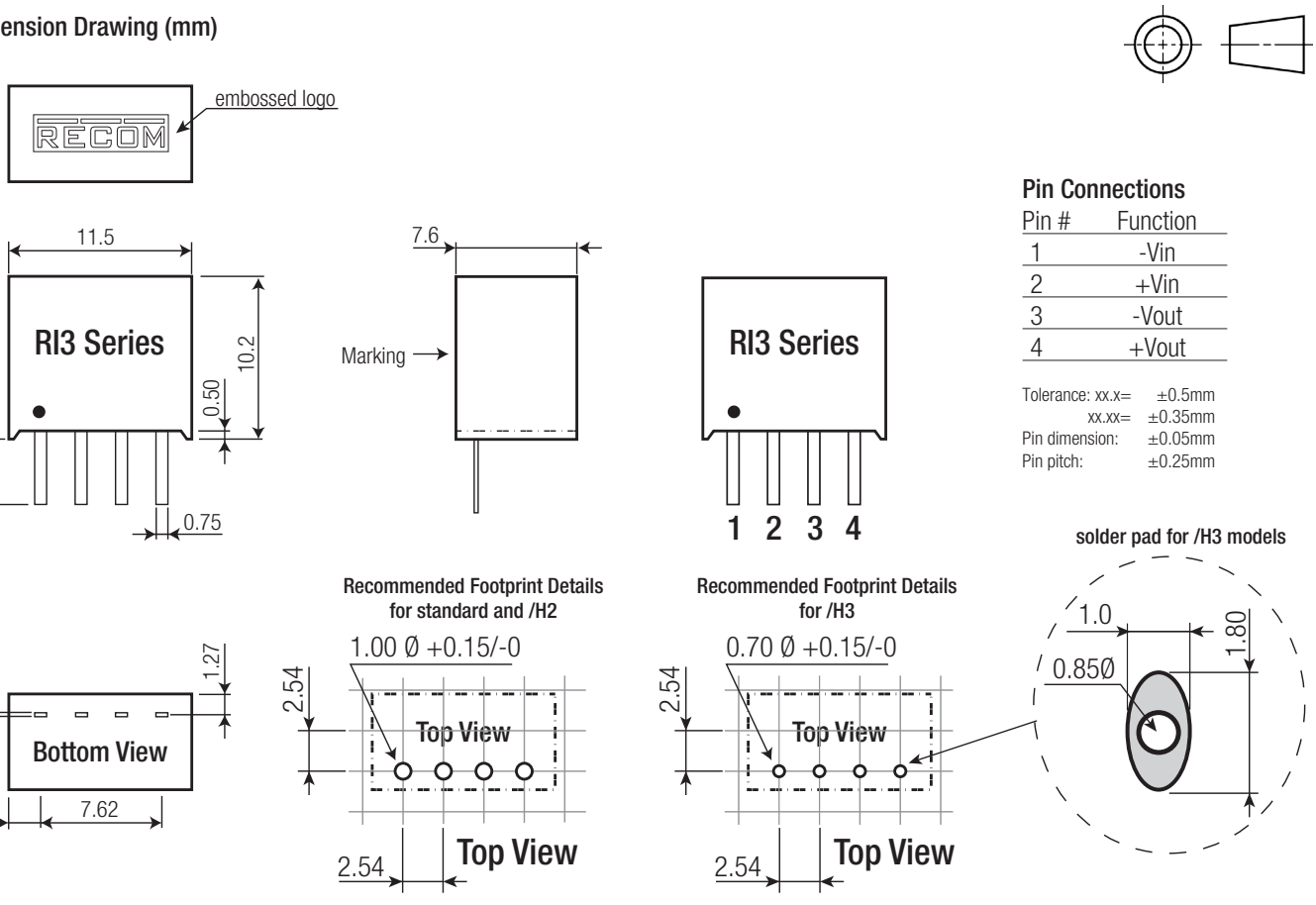
MODEL	C1	C2	L1
RI3-05xxS	4.7µF	470pF/4kV	10µH
RI3-12xxS	4.7µF	470pF/4kV	10µH
RI3-15xxS RI3-24xxS	2.2µF	470pF/4kV	10µH

Specifications (measured at T_a= 25°C, nominal input voltage, full load and after warm up unless otherwise specified)

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Potting	non conductive plastic (UL94V-0) silicone (UL94V-0)
Package Dimension (LxWxH)		11.5 x 10.2 x 7.6mm
Package Weight		2.2g

Dimension Drawing (mm)



Pin Connections

Pin #	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.35mm
Pin dimension: ±0.05mm
Pin pitch: ±0.25mm

PACKAGING INFORMATION

Packaging Dimension (LxWxH)	Tube	520.0 x 9.3 x 16.5mm
Packaging Quantity		42pcs
Storage Temperature Range		-55°C to +125°C